Killick Pond Focus Area

Hollis & Limington, Maine

Description:

The Killick Pond Focus Area is a large geographic area with numerous features of ecological significance including ten exemplary natural communities & ecosystems, eight rare animal populations, and four rare plant populations. Pine barrens and related habitats cover over 1,500 acres at the site. A 420 acre (170 ha) parcel is owned by the Maine Army National Guard (MANG) and is heavily fragmented by sand roads, rifle ranges, and sand pits. It also receives heavy, unregulated recreational use, particularly from ATVs. However, the MANG property is the only pine barrens of this type in Maine currently managed with prescribed fire. Portions of the barrens are bisected by extensive pitch pine bogs dominated by a pitch pine/white pine overstory above a mat of Sphagnum and leatherleaf. The site also has extensive frost pockets.

Pitch Pine-Scrub Oak Barrens (from MNAP files)

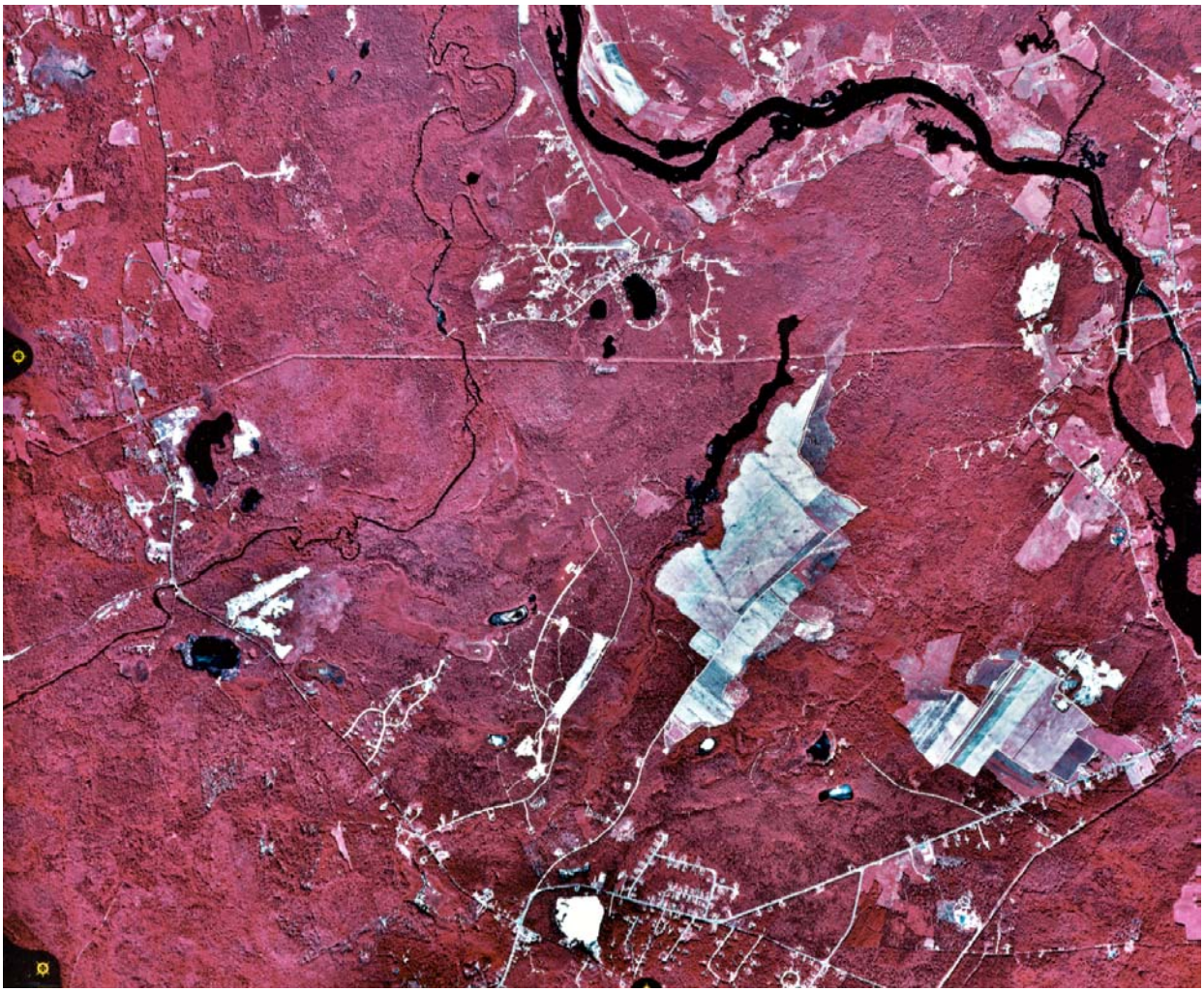
Much of the pine barrens to the west is characterized by a sparse, old age pitch pine canopy above old growth gray birch, but the pitch pine and scrub oak becomes thicker and of better quality to the east. Only a portion of Killick Pond burned in the fire of 1947.

The pitch pine/scrub oak barrens at Killick Pond grow on droughty, nutrient poor soils in areas with coarse grained glacio-marine surficial deposits. Poor soils and cold pockets create harsh growing conditions that limit the number of plant species that can tolerate this

environment. However, the presence of numerous wetlands, ponds, and riparian areas interspersed with the barrens vegetation increases species and community diversity.

Natural Communities & Ecosystems within the Killick Pond Focus Area:

Pitch Pine-Scrub Oak Barrens: Woodlands on sandy outwash deposits with patchy vegetation in which pitch pine is the canopy dominant. In openings, a dense shrub/sapling layer of scrub oak and/or gray birch is typical. The low layer of heath shrubs is dominated by lowbush blueberry, with bracken fern and woodland sedge as characteristic herbs. Mosses are virtually absent. Soils tend to be excessively drained and accumulate very little organic matter.



1991 Infrared Aerial Photo of the Killick Pond Area (focus area extends beyond photo)

Three-way Sedge-Goldenrod Outwash Plain Pondshore: This community is made up of concentric zones of different herbs around shallow, sandy-bottomed ponds in outwash plains, whose shores are inundated for part of the growing season and exposed for part of the growing season. A band of shrubs (e.g. highbush blueberry, maleberry, buttonbush, leatherleaf) is typical at the upland edge. The next lower zone is dominated by narrow-leaved goldenrod and three-

way sedge; golden-pert and meadow beauty are characteristic. The lowest zone, exposed less frequently than those above, is dominated by pipewort and spikerush.

Mixed Tall Sedge Fen: This community is made up of expanses of tall grasses and sedges growing on peat soils. Slender sedge typically dominant, and beaked sedge and lake-bank sedge are also characteristic; bluejoint grass is often present in small amounts. The herb layer is continuous, and most shrubs are less than one meter tall except for an occasional alder or meadowsweet. Dwarf shrubs are always less abundant than the herbaceous plants. The moss layer is in inverse proportion to the amount of standing water. This community is generally found on peaty deposits adjacent to open water; sometimes a floating mat.

Mixed Graminoid Shrub Marsh: A heterogeneous wetland type in which herbs and shrubs occur in various assemblages. The typical example is dominated by herbs (>50% graminoids), often with a sparse shrub layer containing meadowsweet or hardhack. Bluejoint is frequent, mixed with other herbs. Any of a variety of graminoids may be prominent at different sites. Three-way sedge and yellow loosestrife are indicators. A variant in southern Maine has buttonbush as a prominent shrub. Typically on mineral soils that are flooded early in the growing season and remain saturated throughout the season. Additional data and analysis may show this divisible into more than one community type.

Tussock Sedge Meadow: This community is a marsh dominated by well defined hummocks of tussock sedge mixed with bluejoint grass and other grass-like plants. Other wetland herbs vary among sites, and include royal fern, cinnamon fern, sensitive fern, St. Johnswort, flat-topped goldenrod, or wool-grass. This community is generally found on saturated soils, with standing water through much of the growing season. Soils may be entirely organic, or organic over mineral soil. This natural community typically occurs in large flat basins with drainage streams.

Red Maple-Sensitive Fern Swamp: Red maple dominates the somewhat open to nearly closed forest canopy of this swamp. Balsam fir, red spruce, or northern white cedar may be common associates, but are less common than red maple. Winterberry is typical in the patchy shrub layer, and bluejoint grass and sensitive fern are characteristic herbs. This community occurs on mineral soils, or well-decomposed organic material over mineral soil, in small basins, as narrow ribbons along drainage channels, or on floodplains of medium-sized streams to small rivers.

Silver Maple Floodplain Forest: This type has a tall, spreading canopy of silver maple, often with few other tree species, over an open understory. Minor amounts of American elm, red maple, or bur oak may be present. A dense herb layer of spring ephemerals and ferns carpets the ground. It occurs on plains flanking low-gradient rivers, within the reach of seasonal floods, elevation <700'. Soils are fine sand or silt, usually with good drainage capacity.

Kettlehole Bog-Pond Ecosystem: Kettlehole bogs are flat peatlands in "kettles" (circular or elliptical depressions, usually deeper than they are wide, formed in morainal, glaciofluvial, or coastal plain deposits by the melting of buried ice blocks). The centers of these bowl-shaped basins may be a floating peatland mat or open water ringed by peatland. Where the surface of the floating mat is

sufficiently elevated (by peat accumulation) to be free from contact with the mineral-enriched pond water, vegetation typical of nutrient-poor conditions develops. In the southernmost part of the state, kettlehole vegetation may include species of more southern affinity such as Atlantic white cedar, sweet pepperbush, and arrow-arum.

Streamshore Ecosystem: This is the group of communities bordering and directly influenced by the open-water portion of a stream (first-order through third or fourth-order). It includes vegetated aquatic communities as well as the emergent and bordering communities. Most communities are palustrine; streams are generally too small to exert many disturbance effects on adjacent terrestrial areas. Upland forests bordering streams are included under forested upland ecosystems.

Unpatterned Fen Ecosystem: Fens are peatlands in which groundwater or water from adjacent uplands moves through the area. As a result, plants are exposed to more nutrients, and the vegetation is typically different and more diverse than that of bogs. Peat is moderately - to well decomposed and of variable thickness. The vegetation consists predominantly of sedges, grasses, reeds, and sphagnum.

Invertebrates

To date, 5 state-rare species of moth have been documented within the pine barrens at the site. Many of these species are highly dependant on the plant species specific to Pitch Pine-Scrub Oak Barrens and associated habitat types. Some of the plant-larvae relationships can be quite complex with larvae limited to only one species as a food source.

Northern Blazing Star

Ribbon Snake

Rare Plants

Four species of rare plants occur within the focus area (for list see table below). Three of these species are associated with outwash plain pond shore habitat. All three, fall fimbry, dwarf bulrush, and narrow-leaved goldenrod, are listed as State Threatened and require undisturbed shoreline areas with sandy soils where there is a natural seasonal draw down of water. A small population of the fourth species, northern blazing star, was located in 1996 after a prescribed burn was done in the area. The current status of this population should be determined. Other rare plants likely occur in some of the unique habitats within the focus area, more thorough inventory in the future will likely lead to their discovery.

Rare Species Table for Killick Pond Focus Area:

Common Name	Latin Name	Status	S-Rank	G-Rank
Natural Communities & Ecosystems				
Kettlehole Bog – Pond Ecosystem	Kettlehole Bog – Pond Ecosystem	n/a	_	Not ranked
Tall Sedge Fen	Mixed Tall Sedge Fen	n/a	S4	Not ranked
Grassy Shrub Marsh	Mixed Graminoid Shrub Marsh	n/a	S5	Not ranked
Pitch Pine-Scrub Oak Barren	Pitch Pine-Scrub Oak Barren	n/a	S1	G2
Red Maple Swamp	Red Maple-Sensitive Fern Swamp	n/a	S4	Not ranked
Silver Maple Floodplain Forest	Silver Maple Floodplain Forest	n/a	S3	Not ranked
Streamshore Ecosystem	Streamshore Ecosystem	n/a	-	Not ranked
Three-way Sedge-Goldenrod Outwash Plain Pondshore	Three-way Sedge-Goldenrod Outwash Plain Pondshore	n/a	S1	G3
Sedge Meadow	Tussock Sedge Meadow	n/a	S3	Not ranked
Unpatterned Stream Ecosystem	Unpatterned Stream Ecosystem	n/a	_	Not ranked
Rare Plants				
Narrow-Leaved Goldenrod	*Euthamia tenuifolia*	T	S2	G5T5
Fall Fimbry	*Fimbristylis autumnalis*	T	S2	G5
Northern blazing star	*Liatris scariosa*	T	S1	G5T3?
Dwarf Bulrush	*Lipocarpha micrantha*	T	S1	G4T
Rare Animals				
Northern black racer	*Coluber constrictor*	E	S2	G5
Sleepy Dusky Wing	*Erynnis brizo*	no status	S2	G5T5
Thaxter's Pinion Moth	*Lithophane thaxteri*	SC	S4	G4
Eastern Box Turtle	*Terrapene carolina*	E	S1	G5T5
Ribbon Snake	*Thamnophis sauritus*	SC	S3	G5
Acadian Swordgrass Moth	*Xylena thoracica*	SC	S3	G4
Broad Sallow	*Xylotype capax*	SC	S3	G4
Pine Barrens Zale	*Zale sp. 1*	SC	S1	G3Q

Other Resources Mapped by MDIFW:
Deer Wintering Area
Wading Bird / Waterfowl Habitat

Conservation Considerations :

Fire Suppression: Without managed burns or some equivalent vegetation management program, pine barrens community types will succeed to more mesic forest types dominated by red and white oak, and white pine. Only those sites that are the most xeric or frost prone will likely maintain pine barrens habitat. A loss of pine barrens community types will lead to a loss of habitat for pine barrens dependent moths and butterflies. Small pockets of barrens may persist, but the distribution of these pockets may not be adequate to maintain the viable populations of these species. In addition, habitat for rare barrens flora may be lost. It is likely that the Killick Pond Barrens will eventually burn again in a catastrophic fire. The build up of fuel since 1947 and the volatility of the vegetation may result in a severe and intense wildfire under drought conditions. Depending on the scale of such a fire, large shifts in pine barrens community types may occur.

Residential Development: Residential development is not extensive in the focus area, with most being located around the margins. Increased development in the area may cause irreversible impacts to the natural systems through fragmentation due to roads and land conversion. While non-native species are not a current stress on the system, there is an increased likelihood that exotics may play a role in the Killick Pond area as development increases. Frequently, trails and roads are avenues for the dispersal of exotic weeds.

Domestic dogs and cats that roam freely can negatively impact the nesting success and movement of wildlife. Ground nesting birds are particularly vulnerable, and an increase in domestic animals may lead to a decrease in regionally rare populations of whip-poor-wills and common nighthawks. Many people who live in neighboring developments use the area for recreation, including uses that may be incompatible with the ecology of the site (e.g. dumping, off trail use by ORV's, etc.).

Timber Management: Timber management can lead to increased fragmentation and isolation of habitat patches and conversion to other forest types. However, timber management, applied properly within pitch pine habitats may actually help regenerate some barrens community types. There is evidence that past timber management in pitch pine – scrub oak barrens in Maine has been instrumental in perpetuating those systems. Strip cuts completed in the late 1980s at Vernon Walker Wildlife Management Area succeeded in promoting early successional pitch pine community types.

Wetlands and Aquatic Systems: The integrity of wetlands and aquatic systems including all the processes and life forms they support are dependent on the maintenance of the current hydrology and water quality of these systems. Intensive timber harvesting, vegetation clearing, soil disturbance, new roads, and development on buffering uplands can result in greater runoff, sedimentation, and other non-point sources of pollution.

Aerial spraying: Periodically, Gypsy moths are capable of attaining outbreak population levels, defoliating a large proportion of scrub oak and other species in some areas of southern

Maine. During an outbreak period, as we will be entering these next couple of years in southern Maine, several thousand acres will be sprayed with BT (Bacillus thuringensis) from the air to help control Gypsy moth populations. While BT is believed to pose no threat to higher organisms, it is NOT host specific within the order Lepidoptera and thus poses a potentially severe threat to the area's rare butterfly and moth species. For this reason, wide buffers (1/2 mile) should be flown around sections of pitch pine barrens hosting known occurrences of rare butterflies and moths when spraying pesticides for control of gypsy moths and other pests.

Protection Status:

Within the focus area MDIFW owns 2,220 acres and the Maine Army National Guard owns 420 acres.

STATE RARITY RANKS

S1 Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.

S2 Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.

S3 Rare in Maine (on the order of 20-100 occurrences).

S4 Apparently secure in Maine.

S5 Demonstrably secure in Maine.

Note: **State Ranks** are determined by the Maine Natural Areas Program.

GLOBAL RARITY RANKS

G1 Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.

G2 Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.

G3 Globally rare (on the order of 20-100 occurrences).

G4 Apparently secure globally.

G5 Demonstrably secure globally.

Note: **Global Ranks** are determined by The Nature Conservancy.

STATE LEGAL STATUS FOR PLANTS

Note: State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's endangered and threatened plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

E ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future, or federally listed as Endangered.

T THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.

SC SPECIAL CONCERN; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.

Visit our web site for more information on rare, threatened and endangered species!
http://www.state.me.us/doc/nrimc/mnap/factsheets/mnapfact.htm